

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
 United States Patent and Trademark
 Office
 Box PCT
 Washington, D.C. 20231
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 10 October 2000 (10.10.00)	
International application No. PCT/US00/03926	Applicant's or agent's file reference 11694-04087
International filing date (day/month/year) 15 February 2000 (15.02.00)	Priority date (day/month/year) 15 February 1999 (15.02.99)
Applicant KOBAYASHI, Shigeru et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:
05 September 2000 (05.09.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Nestor Santesso Telephone No.: (41-22) 338.83.38
---	---

Claims

We claim:

1. A color changing apparatus for multiple color coating of conductive coating material, wherein a pipe joint a provided to be movable on a guide rail and an electrostatic spray gun connected to the pipe joint a through a pipeline are provided; a plurality of coating material supply circulation circuits are provided, each including a liquid tank, a pump and a pipe joint b disengageably engaged with the pipe joint a, the liquid tank and the pump and the pipe joint b being connected through a pipeline; and the pipe joint a and the pipe joint b in the plurality of coating material supply circulation circuits are selectively disengaged from each other.
2. An apparatus for selecting one of a plurality of different coating materials for transmission to a spray device, comprising:
- a plurality of coating material sources;
 - a spray device;
 - a supply line from each of said coating material sources to a coating material coupling associated with each of said sources;
 - a supply line connected between a movable coupling and said spray device; and
 - a drive for engaging said movable coupling with one of said coating material couplings to transmit coating material from one of said coating material sources to said spray device.
3. The apparatus of claim 2 where in at least one of said coating materials is electrically conductive.
4. The apparatus of claim 2 further comprising a power supply for applying an electric charge to coating material discharged from said spray device and a voltage block which electrically isolates said coating material source which is transmitting coating material to said spray device from electrical ground.
5. The apparatus of claim 4 wherein said voltage block electrically isolates from said spray device said coating material sources which are not transmitting coating material to said spray device.

6. An apparatus for selecting one of a plurality of different coating materials for transmission to a spray device, comprising:
- a plurality of coating material sources;
 - a corresponding plurality of coating material couplings each connected to a respective one of said coating material sources;
 - a spray device;
 - a movable coupling connected to said spray device; and
 - a drive for engaging said movable coupling with one of said coating material couplings to transmit coating material from one of said coating material sources to said spray device.
7. In a coating system having a plurality of sources of different coating materials and a spray device, a supply line from each of said coating material sources to a coating material coupling associated with each source, and a feed line from a movable coupling to said spray device, a method for supplying coating material from one of said sources to said spray device, comprising the steps of:
- supplying coating material from a first source of coating material through a first supply line to a first coating material coupling associated with said first source;
 - moving said movable coupling to first position wherein said movable coupling is engaged with said first coating material coupling to permit coating material to be transmitted from said first source through said movable coupling; and
 - supplying coating material from said movable coupling through said feed line to said spray device.
8. The method of claim 7, wherein at least one of said coating materials is electrically conductive and wherein an electric charge is applied to coating material discharged from said spray device, further comprising the step of electrically isolating said first source of coating material from electrical ground while coating material is being transmitted from said first source to said spray device.
9. The method of claim 8, further comprising the steps of terminating the transmission of coating material from said first source to said spray device, disengaging said movable coupling from said first coupling, cleaning said movable coupling, said feed line and said spray device of residual coating material from said first source of coating material, moving

said movable coupling to a second position wherein said movable coupling is engaged with a second coating material coupling which is connected by a second supply line to a second source of coating material, and transmitting coating material from said second source of coating material to said spray device while said second source of coating material is electrically isolated from electric ground.

10. In a coating system having a plurality of sources of different coating materials, a corresponding plurality of coating material couplings each one of which is connected to a respective one of said plurality of sources of different coating materials, a spray device, and a movable coupling connected to said spray device, a method for supplying coating material from one of said sources to said spray device, comprising the steps of:

supplying coating material from a first source of coating material to a first coating material coupling connected with said first source;

moving said movable coupling to first position wherein said movable coupling is engaged with said first coating material coupling to permit coating material to be transmitted from said first source through said movable coupling; and

supplying coating material from said movable coupling to said spray device.

11. The method of claim 10, wherein at least one of said coating materials is electrically conductive and wherein an electric charge is applied to coating material discharged from said spray device, further comprising the step of electrically isolating said first source of coating material from electrical ground while coating material is being transmitted from said first source to said spray device.

12. The method of claim 10, further comprising the steps of:

terminating the transmission of coating material from said first source to said spray device:

disengaging said movable coupling from said first coupling;

cleaning said movable coupling and said spray device of residual coating material from said first source of coating material;

moving said movable coupling to a second position wherein said movable coupling is engaged with a second coating material coupling which is connected to a second source of coating material; and

transmitting coating material from said second source of coating material to said spray device while electrically isolating said second source of coating material from electric ground.

PATENT COOPERATION TREATY

PCT

REC'D 22 MAY 2001

WIPO

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14

Applicant's or agent's file reference 11694-04087	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/US00/03926	International filing date (day/month/year) 15/02/2000	Priority date (day/month/year) 15/02/1999
International Patent Classification (IPC) or national classification and IPC B05B12/14		
Applicant NORDSON CORPORATION et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 3 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 05/09/2000	Date of completion of this report 18.05.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Innecken, A Telephone No. +49 89 2399 8911 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/03926

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-10 as originally filed

Claims, No.:

1-11 as received on 17/04/2000 with letter of 17/04/2000

Drawings, sheets:

1/2,2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/US00/03926

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-11
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-11
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-11
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/03926

Novelty, inventive step and industrial applicability (Item V)

1. Independent claims 1 and 10 meet the requirements of novelty, inventive step and industrial application according to Articles 33(2) to 33(4) PCT.
2. The subject-matter of independent claims 1 and 10 is novel as none of the prior art documents cited in the Search Report or acknowledged in the description discloses all of the features or method steps, respectively, of these independent claims.
3. The documents cited in the Search Report do not render any suggestion to a skilled person to construct a colour changing apparatus as disclosed in **US4232055A (D3)** according to the further features of claim 1 or to modify the method applied in (D3) according to the further method steps of independent claim 10. The features or method steps, respectively, concerning the arrangement of the pipe joint being movable on a guide rail and being selectively engaged or disengaged with pipe joints of a plurality of coating material circuits, result from a step being non-obvious in view of the cited prior art documents. Although document **US3674207A (D1)** discloses a colour changing system comprising these features there is no incentive to replace the colour change manifold 29 of (D3) with this specific structure and arrangement. Thus the colour changing apparatus or method, respectively, according to either of independent claims 1 and 10 involves an inventive step.
4. The subject-matter of independent claim 1 is able to work, can be manufactured, and the method steps of independent claim 10 can be carried out. Thus the subject-matter of claim 1 and the method of claim 10 are looked upon as being industrially applicable.
5. Dependent claims 2 to 9 and 11 define further advantageous and non-obvious variations of the colour changing apparatus according to independent claim 1 or the method of claim 10 and thus equally meet the requirements of novelty, inventive step and industrial application according to Articles 33(2) to 33(4) PCT.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/US00/03926

Certain defects in the international application (Item VII)

1. Independent claims 1 and 10 are not drafted in the two part form specified in Rule 6.3b) of the PCT.
2. The description does not cite document US4232055A reflecting the closest background art (see Rule 5.1a) ii) PCT).
3. The description does not disclose the invention as claimed (see Rule 5.1a) iii) PCT).

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/03926

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 B05B12/14 B05B5/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 674 207 A (CONOVER, LEWIS ET AL) 4 July 1972 (1972-07-04)	1,2,6,7, 10
Y	column 1, line 74 -column 3, line 7; figure 2	3-5,8,9, 11,12
X	--- PATENT ABSTRACTS OF JAPAN vol. 016, no. 029 (C-0904), 24 January 1992 (1992-01-24) & JP 03 242254 A (TOKICO LTD), 29 October 1991 (1991-10-29)	1,2,6,7, 10
Y	abstract	3-5,8,9, 11,12
X	--- US 4 864 966 A (ANDERSON, G. SCOTT ET AL) 12 September 1989 (1989-09-12) column 4, line 36 -column 7, line 23; figures 1-6	2,6,10
	--- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

14 June 2000

Date of mailing of the international search report

26/06/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Innecken, A

INTERNATIONAL SEARCH REPORT

Int. l. Application No

PCT/US 00/03926

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 149 323 A (DAIMLER BENZ AG) 12 June 1985 (1985-06-12) page 2, left-hand column, line 3 -page 3, left-hand column, line 13; figures ---	2,6,10
X	WO 97 24189 A (AEBERHARD, CHRISTIAN; INGENIEURBÜRO INOVAC) 10 July 1997 (1997-07-10) page 29, line 27 -page 30, line 22; figure 10 ---	6,10,12
Y	US 4 232 055 A (SHAFFER, DONALD O.) 4 November 1980 (1980-11-04) column 5, line 9 -column 9, line 21; figures -----	3-5,8,9, 11,12

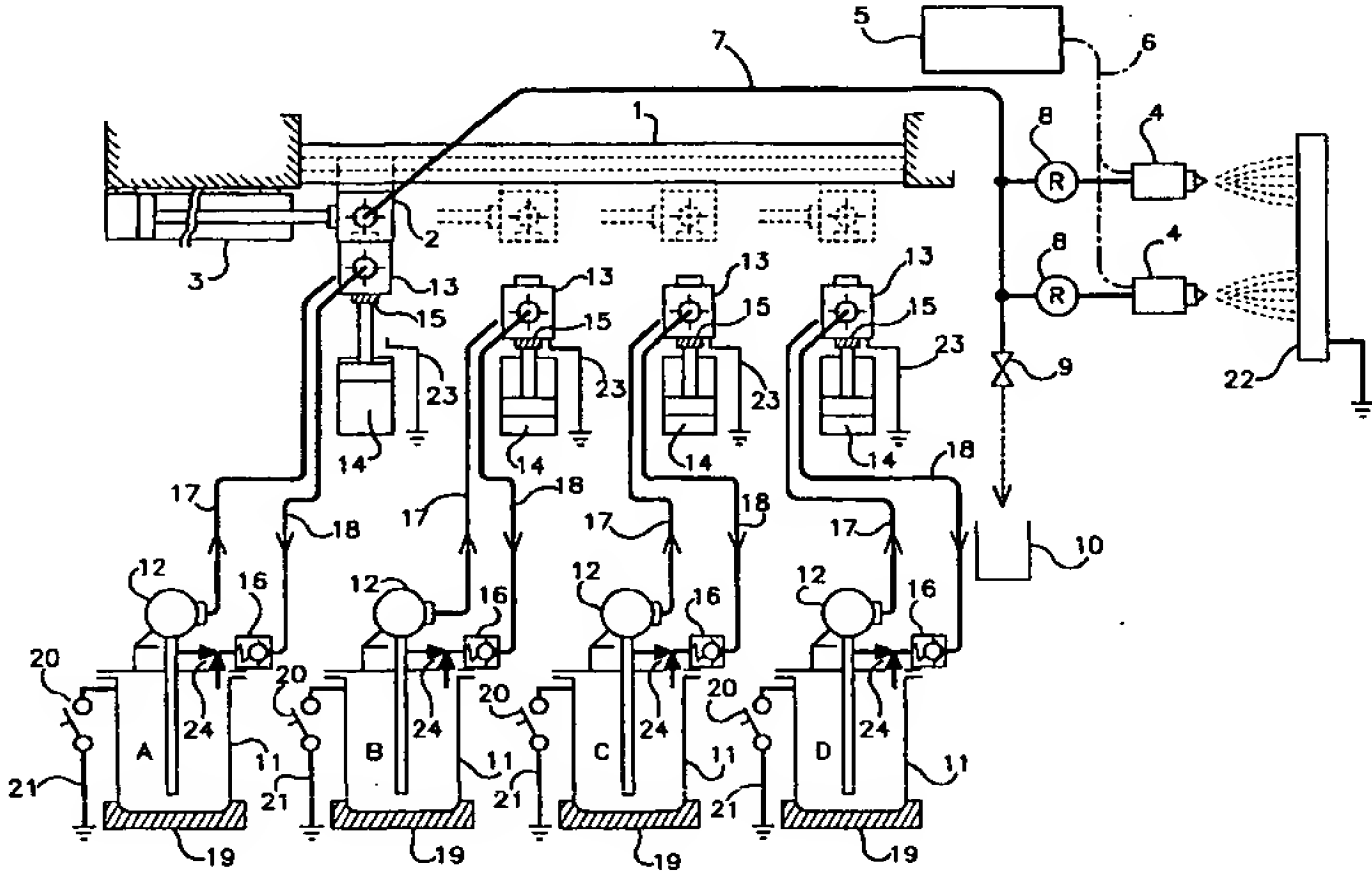
INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/03926

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
US 3674207	A	04-07-1972	NONE		
JP 03242254	A	29-10-1991	NONE		
US 4864966	A	12-09-1989	NONE		
GB 2149323	A	12-06-1985	DE	3340614 C	21-02-1985
			FR	2554740 A	17-05-1985
			IT	1177127 B	26-08-1987
WO 9724189	A	10-07-1997	EP	0886546 A	30-12-1998
US 4232055	A	04-11-1980	BE	882965 A	18-08-1980
			BR	8002489 A	09-12-1980
			CA	1150113 A	19-07-1983
			DE	3014221 A	13-11-1980
			FR	2454846 A	21-11-1980
			GB	2049489 A, B	31-12-1980
			IT	1164854 B	15-04-1987
			MX	148003 A	22-02-1983

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁷ : B05B 12/14, 5/16	A1	(11) International Publication Number: WO 00/47333 (43) International Publication Date: 17 August 2000 (17.08.00)
(21) International Application Number: PCT/US00/03926 (22) International Filing Date: 15 February 2000 (15.02.00) (30) Priority Data: 11/76290 15 February 1999 (15.02.99) JP (71) Applicant (for all designated States except US): NORDSON CORPORATION [US/US]; 28601 Clemens Road, Westlake, OH 44145 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): KOBAYASHI, Shigeru [JP/JP]; 8-41-9, Asumigaoka, Midori-ku, Chiba-city, Chiba 267-0066 (JP). TSUKAMOTO, Hidetaka [JP/JP]; 7-41, Koizumikoso, Betsuin-cho, Kameoka-city, Kyoto 621-0101 (JP). IKEDA, Nobuo [JP/JP]; 2-22-3-C101, Kamata, Ota-ku, Tokyo 144-0052 (JP). (74) Agent: GUTT, Ronald, D.; Calfee, Halter & Griswold LLP, Suite 1400, 800 Superior Avenue, Cleveland, OH 44114 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>
(54) Title: COLOR CHANGING APPARATUS FOR ELECTRICALLY CONDUCTIVE COATING MATERIAL COMPRISING MOVABLE CONDUIT JOINT  (57) Abstract <p>In a color changing apparatus for multiple color electrostatic coating of conductive coating material, a pipe joint (a) provided to be movable and an electrostatic spray gun connected to the pipe joint (a) through a pipeline are provided. A plurality of coating material supply circulation circuits, including a liquid tank, a pump and a pipe joint (b) disengageably engageable with the pipe joint (a) are provided. The liquid tank, the pump and the pipe joint (b) are connected through a pipeline. The pipe joint (a) and the pipe joint (b) in the plurality of coating material supply circulation circuits can be selectively engaged.</p>		

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

TENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 11694-04087	<div style="display: flex; justify-content: space-between;"> <div style="width: 40%;"> FOR FURTHER ACTION </div> <div style="width: 60%; font-size: small;"> see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below. </div> </div>	
International application No. PCT/US 00/ 03926	International filing date (day/month/year) 15/02/2000	(Earliest) Priority Date (day/month/year) 15/02/1999
Applicant NORDSON CORPORATION et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

**COLOR CHANGING APPARATUS FOR ELECTRICALLY CONDUCTIVE COATING MATERIAL
COMPRISING MOVABLE CONDUIT JOINT**

5. With regard to the **abstract**,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 00/ 03926

Box III TEXT OF THE ABSTRACT (Continuation of item 5 of the first sheet)

In a color changing apparatus for multiple color electrostatic coating of conductive coating material, a pipe joint (a) provided to be movable and an electrostatic spray gun connected to the pipe joint (a) through a pipeline are provided. A plurality of coating material supply circulation circuits, including a liquid tank, a pump and a pipe joint (b) disengageably engageable with the pipe joint (a) are provided. The liquid tank, the pump and the pipe joint (b) are connected through a pipeline. The pipe joint (a) and the pipe joint (b) in the plurality of coating material supply circulation circuits can be selectively engaged.

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/03926

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B05B12/14 B05B5/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 3 674 207 A (CONOVER, LEWIS ET AL) 4 July 1972 (1972-07-04)	1, 2, 6, 7, 10
Y	column 1, line 74 -column 3, line 7; figure 2	3-5, 8, 9, 11, 12
X	--- PATENT ABSTRACTS OF JAPAN vol. 016, no. 029 (C-0904), 24 January 1992 (1992-01-24) & JP 03 242254 A (TOKICO LTD), 29 October 1991 (1991-10-29)	1, 2, 6, 7, 10
Y	abstract	3-5, 8, 9, 11, 12
X	--- US 4 864 966 A (ANDERSON, G. SCOTT ET AL) 12 September 1989 (1989-09-12) column 4, line 36 -column 7, line 23; figures 1-6	2, 6, 10
	--- -/-	

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

° Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

14 June 2000

Date of mailing of the international search report

26/06/2000

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Innecken, A

INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/03926

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB 2 149 323 A (DAIMLER BENZ AG) 12 June 1985 (1985-06-12) page 2, left-hand column, line 3 -page 3, left-hand column, line 13; figures ---	2,6,10
X	WO 97 24189 A (AEERHARD, CHRISTIAN; INGENIEURBÜRO INOVAC) 10 July 1997 (1997-07-10) page 29, line 27 -page 30, line 22; figure 10 ---	6,10,12
Y	US 4 232 055 A (SHAFFER, DONALD O.) 4 November 1980 (1980-11-04) column 5, line 9 -column 9, line 21; figures -----	3-5,8,9, 11,12

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/03926

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 3674207	A	04-07-1972	NONE	
JP 03242254	A	29-10-1991	NONE	
US 4864966	A	12-09-1989	NONE	
GB 2149323	A	12-06-1985	DE 3340614 C FR 2554740 A IT 1177127 B	21-02-1985 17-05-1985 26-08-1987
WO 9724189	A	10-07-1997	EP 0886546 A	30-12-1998
US 4232055	A	04-11-1980	BE 882965 A BR 8002489 A CA 1150113 A DE 3014221 A FR 2454846 A GB 2049489 A, B IT 1164854 B MX 148003 A	18-08-1980 09-12-1980 19-07-1983 13-11-1980 21-11-1980 31-12-1980 15-04-1987 22-02-1983